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ABSTRACT

An investigation was made of the relationships among teachers' stages of development; their perceptions of school and classroom problems; and their reasons for participating in a collaborative action research project. On the basis of observations, logs, interviews, and introductory questionnaire data, life age/cycle profiles of each of 10 middle and junior high school teachers were constructed. Each teacher completed questionnaires to describe character-related personality stages of development. Three test instruments were used to determine teachers' levels of moral reasoning, ego maturity, conceptual complexity, and interpersonal sensitivity. The teachers' stages of development were then related to their perceptions of the change process and the process of collaboration during the Action Research Project. Developmental stage profiles of the teachers were then constructed. The data suggested themes on the relationships of individual dimensions of teachers' stages of development, issues in the teaching-schooling profession, and the process of collaborative research. (Author/JD)

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Developmental Stage Characteristics of Teachers Participating in a Collaborative Action Research Project

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Preface

This report investigates relationships between ten middle/junior high school teachers' stages of development; their perceptions of school and classroom problems, dilemmas, tasks: and their personal/professional reasons for participating in a collaborative action research project.

Between September, 1981 and June, 1983, each of the ten teachers was observed during the weekly meetings of the two collaborative action research teams. Each teacher also participated in in-depth semi-structured interviews and completed pre/post written questionnaires. Tape recordings of the meetings and interviews were transcribed and used as an additional data source. Each teacher kept a written log or journal over this time period, and these logs were used as a final source of data.

On the basis of the observations, logs, interviews and introductory questionnaire data, life age/cycle profiles of each of the ten teachers were constructed. These profiles are available in a previous report entitled "Life Age/Cycle Characteristics of ARCS Teachers", (Oja, 1983).

Each teacher also completed questionnaires to describe character related personality stages of development: the Loevinger Ego Test, the Rest Defining Issues Test of Moral Reasoning, and the Hunt Conceptual Level Test.

This report begins with an overview of developmental stage theory and the three test instruments which were used to determine teachers' levels of: 1) moral reasoning, 2) ego maturity, 3) conceptual complexity, and 4) interpersonal sensitivity.

The teachers' stages of development are then related to the teachers' perceptions of the change process and the process of collaboration during the Action Research project. Stage profiles of the teachers are then constructed.

The data suggests themes in the relationships of individual dimensions of teachers' stages of development and issues in the teaching-schooling profession and the process of collaborative action research. In addition, analysis of the two collaborative teams suggests differences based in the average stage scores of the teachers on each team.

Introduction

Recently, large numbers of psychologists have begun to draw upon developmental perspectives to aid in their study of personality. Various developmental theories -- describing predictable sequences of growth, adaptation, transformation, and change in humans -- are employed to this end. While much of the work in this area has focused on the role of such developmental processes in personality development among children, more attention has recently been paid to such processes in adulthood.

Research suggests that there is wide variation in developmental levels among adults. Adulthood appears to be a time in which such processes as the reworking of identity and the differentiation and hierarchical integration of personality and thought, have an influential role to play. Theories of adult development describe adults as capable of movement toward greater maturity, with this movement taking place in a predictable and orderly fashion analogous to the biological/maturational processes of development we observe in childhood.

Unique to adult development is the fact that biological/maturational events play little or no role. Adult development is paced by cultural and societal expectations as well as by personal values and aspirations. Two broad perspectives can be identified on the issue of what prompts developmental growth in adulthood. Life Age/Cycle theorists focus on predictable life events as pacers for development. Such tasks as establishing and maintaining social and interpersonal roles as well as dealing with essential intrapsychic tasks provide the impetus for change, and sometimes growth, in adults. Cognitive Developmental Stage theorists, on the other hand, focus on particular cognitive/emotional perspectives distinctive to different stages of development. The events that may prompt development will vary according to the perspective a person currently holds. Life Age/Cycle theorists describe transitions and adaptations to life events; Cognitive Developmental stage theorists describe transformations in adults' ways of constructing experience; Life Age/Cycle theorists consider maturity to consist of successful adaptation to societal expectations. Cognitive/Developmental stage theorists, instead, describe a growth process of maturity in one's perspective; they say:

> Maturity may be seen as a developmental process of movement through the adult years toward meaning perspectives that are progressively more inclusive, discriminating and more integrative of experience. In ascending this gradient toward fuller maturity, we move, if we can, toward perspectives that are more universal, and better able to deal with abstract relationships, that more clearly identify psycho-cultural assumptions shaping our actions and causing our needs, that provide criteria for more principled value judgments, enhance our sense of agency or control and give us a clearer meaning and sense of direction in our lives.
>
> (Mezirow, 1978)

Rather than focusing on the tasks each individual faces in the course of his/her lifetime, stage theorists focus on underlying patterns of thought which, they claim, play a central role in determining the individual's approach to the world. Stage theorists posit more global, holistic determinants of experience than those highlighted by Life Age/Cycle theorists. Stage theorists, such as Piaget, Kohlberg, Loevinger, Selman, and Hunt, maintain that human development, personality, and character are the result of orderly changes in underlying cognitive and emotional structures. Development involves progression through an invariant sequence of hierarchically organized stages. Each new stage incorporates and transforms the structures of the previous stages and paves the way for the next stage. Each stage provides a qualitatively different frame of reference through which one interprets and acts upon the world. The sequence of development progresses from simpler to more complex and differentiated modes of thought and functioning. The higher stages of development are said to represent more adequate modes of functioning in the sense that they include adopting multiple points of view, more empathic role taking; and more adequate problem solving (Oja, 1978, 1980). Underlying these theories, therefore, is the assumption that development is a process of growth into maturity. This developmental sequence is regarded as a determinant of behavior on a par with such determinants as heredity and situational and environmental factors (Loevinger, 1976).

Cognitive/Developmental theorists provide several different frameworks for observing how individuals organize their worlds: Piaget focuses on cognitive processes or thought patterns (1960, 1972), Kohlberg on moral reasoning processes (1969, 1976), Loevinger on ego maturity processes (1966, 1970a, 1970b, 1976), Hunt on conceptual processes (1966, 1975) and Selman (1980) on interpersonal processes. Each of these frameworks is discussed separately in the sections that follow.

The remainder of this report examines the contributions of the Cognitive/Developmental stage theorists to an understanding of adult development of 10 middle/junior high teachers. The goal in examining this literature is to gather relevant information with teachers. Specifically, we will be seeking to ascertain what is known about the needs of ten middle/junior high school teachers at various stages of development as well as how such developmental differences influence their perceptions of collaborative research and their benavior on a collaborative research team.

Overview of Developmental Stage Theory

The developmental stage theorists provide one distinct framework in personality research. An overview of each is presented in this section.

Moral Development

Kohlberg's (1973) theory of moral judgment identifies three

levels and six stages of moral growth representing qualitatively different systems of thinking that people actually employ in dealing with moral dilemma questions. Stages of moral development adhere to the characteristics of stage models listed in the previous paragraph. The pre-conventional level has two stages, Stage 1 being the punishment-obedience orientation and Stage 2 having an instrumental hedonism and concrete reciprocity orientation. The conventional level consists of Stage 3, with an orientation to interpersonal relations of mutuality and Stage 4 oriented to the maintenance of social order, fixed rules and authority. The post-conventional level consists of Stage 5, with a social contract orientation and utilitarian lawmaking perspective and Stage 6 being the universal ethical principal orientation.

Ego Development

Loevinger (1976) in her theory of ego development has conceptualized seven sequential, invariantly ordered, hierarchical stages with three transitional stages. Each stage is more complex than the last and none can be skipped in the course of development. However, different individuals may stabilize at certain stages and consequently not develop beyond these stages. The ego stages in this model are titled: I-1 Symbiotic stage; I-2 Impulsive stage; I-Delta Self-Protective; I-3 Conformist stage; I-3/4 Self-Aware Transition; I-4 Conscientious stage; I-4/5 Individualist Transition; I-5 Autonomous stage; and I-6 Integrated stage.

According to the theorists, the Impulsive and Self-Protective ego stage correspond to the preconventional moral judgment stage. The Conformist, Self-Aware and Conscientious ego stages correspond to the conventional moral judgment stage and are suggested to be predominant adult ego and moral stages (Hauser, 1976; Loevinger, 1976). It is the Individualist, Autonomous, and Integrated ego stages, however, that correspond to the post-conventional moral development stages and the abstract stages of conceptual development described by Hunt in the next section: Table 1 shows the correspondence of the ego, moral, and conceptual development stages.

Conceptual Development

Conceptual systems as defined by Harvey, Hunt, and Schroeder (1961) describe four stages of cognitive complexity which characterize the ability of an individual to differentiate and integrate environmental stimuli and which relate to the ability of an individual to function adaptively and efficiently in a given environment. Hunt (1976) built upon the original conceptual systems theory and defined Conceptual Level (CL) by degree of abstractness (differentiation, integration, and discrimination) as well as interpersonal maturity (increasing self-responsibility). A person scoring at a high conceptual level is more complex, more capable of responsible actions, and most important, more capable of adapting to a changing environment than is a person with a low conceptual level (Hunt, 1975). Hunt's successive developmental stages are reflected in the CL scoring system defined

Table I

COMPARISON OF STAGES OF DEVELOPMENT

ARCS TEACHERS STAGES OF DEVELOPMENT	Stages of Development: Ego Development Loevinger	Moral Development Rest, Kohlberg	Cognitive Development Piaget	Conceptual Development Harvey, Hunt, Schroder	Interpersonal Development Selman
	Presocial	Preconventional (Stages 1 & 2)	Sensori/Motor	Unilateral Dependence	Unilateral Relations
	Symbiotic				
	Impulsive		Preoperational		
	Self-Protective Transition		Concrete Operations	Negative Independence	Bilateral Partnerships
CONVENTIONAL	Conformist	Conventional (Stages 3 & 4)	Concrete/Formal Operations	Mutual Dependence	Homogeneous Relations
TRANSITIONAL	Self-Aware Transition				
GOAL-ORIENTED	Conscientious				
SELF-DEFINING	Individualistic Transition	Post-Conventional (Stages 5 & 6)	Full formal Operations	Interdependence	Pluralistic Relations
	Autonomous				
	Integrated				

in Hunt, et. al. (1973) as follows: The lowest stage is characterized by concrete negativism, lack of differentiation, overgeneralization and preoccupation with immediate gratification of personal need. Stage 1 represents responses containing categorical judgments (good-bad, right-wrong), overgeneralized and unequalified acceptance of a single rule, and reliance of external standards. Stage 2 represents responses which begin to show signs of self-delineation, express an awareness of alternatives and indicate sensitivity to the one's own feelings. The highest, Stage 3, represents responses which demonstrate a clear indication of self-delineation and reliance on internal standards, a sense of self in context or relationship with others, and the ability to take two viewpoints into account simultaneously.

Interpersonal Development

Robert Selman's (1980) theory of Interpersonal Understanding identifies five levels of Social Perspective Taking based on both the individual's cognitive capability and the social context. The five stages reflect a person's concepts of persons plus concepts of relations. The five levels move from the undifferentiated egocentric stage 0 to the in-depth societal symbolic stage 4. Level 0 represents undifferentiated concepts of persons and egocentric concepts of relations. Level 1 represents differentiated concepts of persons and subjective concepts of relations. Level 2 represents self-reflective and second person concepts of persons combined with reciprocal relations. Level 3 represents third person concepts and mutual relations. Level 4 represents in-depth concepts of persons and societal-symbolic relations.

Perspective Taking is one more structure within the hypothetical stage development constructs. Kohlberg theorized role taking as important to the moral development theory, but Selman has specified the development of perspective taking using the cognitive developmental models of Piaget and Kohlberg as well as the works of Flavell, Mead and Feffer.

Perspective coordination is a key idea. Social perspective taking includes developing understanding of how human points of view are related and coordinated.

Selman's model of social perspective taking was utilized in the current study to investigate a theme which emerged during the second year of the project: a teacher's developmental stage affects the dynamics and outcome of the collaborative action research group process. The assessments of developmental stage were investigated as a predictor of thinking and functioning, and Selman's level of interpersonal functioning was used as a cross-check in the investigation of the teacher's thinking about and acting in the process of the collaborative action research team. This study focused on the behavioral concommitants of underlying social cognitive capacity. As such it was less tied to demonstrating the validity of the stages and more tied to using the developmental model to provide a framework for understanding the

growth and maturity of the observable social reasoning behavior on the collaborative action research team. This study thus attempted to order retrospectively the data observed and documented in social reasoning behavior during the natural working of the collaborative action research team in practice.

A recent review of developmental theory (Johnson & Oja, 1983) suggests the incompleteness of developmental theory in the area of interpersonal competence. In particular, interpersonal sensitivity is a missing element and the work of Selman was used to help address this gap and expand the theory. Collaborative action research is an activity which requires members to take the perspective of others. Thus, the Selman model was suggested as one to be helpful in investigating the problem solving activities in a real world situation, (like the collaborative action research team) and connecting the results to developmental theory. The Selman model was most important in this study in investigating developmental stage as a predictor of interpersonal functioning on a collaborative action research team and as a further avenue to differentiate individuals on the team.

The Developmental Stage Questionnaires

During the selection process for 10 middle/junior high school teachers to participate in a collaborative action research project, all interested volunteers in two schools were asked to respond to an Educational Experiences Inventory and three empirical measures of developmental stages: the DIT of Moral Judgment, the WUSCT of ego development and the CL test of conceptual complexity. Each of the Developmental stage questionnaires is described further in the following section of this report.

The Defining Issues Test (DIT) of moral development (Rest, et al., 1974) is an objective test of moral reasoning which assesses the basic conceptual frameworks by which a person analyzes a social-moral problem (dilemma) and judges the proper course of action. The DIT presents a moral dilemma and a list of definitions of the major issues involved. The DIT is based on Kohlberg's (1969) theory of six stages of moral reasoning but uses a multiple choice, rating and ranking system instead of a moral judgment interview. It can be easily administered to groups, objectively scored, and has been researched with firm reliability and validity levels (Rest, 1974). The DIT is based on the assumption that people at different developmental stages perceive moral dilemmas differently and will choose different statements as the "most important" issues to be considered in making a decision about the dilemma. The DIT used in this study consisted of six dilemmas (stories). Each story has 12 statements (or issues); the subject is asked to first rate each statement on a 5-point scale from "great importance" to "no

importance" and then to rank order the four most important choices. (Complete scoring system is described in Rest, et al., 1974). Since each issue statement represents a moral judgment stage, a subject's choices of the most important issues over a number of moral dilemma stories are taken as a measure of his/her grasp of different stages of moral reasoning. Rest (1976) reports that the most useful single index he has found in research with the DIT is the combined weighted ranks of items keyed as Stages 5A, 5B, and 6. This composite score is called the Rank-P score. The "P score" represents the relative importance a subject gives to principled moral considerations in making moral decisions and corresponds to Kohlberg's post-conventional level. It is a continuous variable ranging from 0 to .95. Rest (1975) reports a .68 correlation between the DIT and Kohlberg's measure of moral judgment in a sample of 47 Ss aged junior high to adulthood. The DITs in this study were scored on Rest's computerized scoring program available from the DIT project office. Rest and Davidson (198) have classified P scores into quartiles which range from 0 to .38 as low P; .39 to .58 as moderately low P score; .59 to .77 as moderately high P score; and P greater than .77 as high P score.

The Washington University Sentence Completion Test (WUSCT) of ego development (Loevinger & Wessler, 1970) is based on the assumption that each person has a core level of ego functioning. The purpose of the test is to determine this core level by assigning an ego level based on the distribution of a person's ratings or responses to the item in the test. Reliability and validity data for the WUSCT are reported in Redmore and Waldman (1975); and reviewed further in Hauser (1976). A single protocol rating for this study was assigned by matching an intuitive rating with a total Protocol Rating (TPR) assigned according to a set of "ogive rules". This is described as the "non-automatic" or "intuitive TPR" scoring scheme and is recommended when the rater is highly experienced. All ego development tests were given code numbers, randomly sorted with identifying information deleted, and scored for ego level. All protocols for this study were scored by a highly experienced Loevinger trained rater who has achieved inter-rater reliability on final TPR score of .93 on previous rating jobs. The WUSCT Form 9-62 for women and Form 10-68 for men were employed and scored according to the ogive-intuitive procedure. This study used the typical 36-item test. The item-sum rating has been suggested as an alternative to the ogive-rating for the WUSCT of ego development. This method has the disadvantage of yielding values which are more likely correlated with verbal fluency than either the ogive-automatic rating or the ogive-intuitive rating (Loevinger & Wessler, 1970). Consequently, the item-sum method was not used. The final Total Protocol Rating (TPR) scores assigned teacher's scores to one of the seven stages of ego development or to a transitional level between two stages.

The Paragraph Completion Test (PCT) developed by Hunt, Greenwood, Noy, and Watson (1973) was used in this study to measure teachers' conceptual levels (CL). The PCT uses a semi-

projective format in which the S is required to project his or her own frame reference within the areas of: (1) conflict or uncertainty ("When I am criticized," "When I am not sure," and "When someone does not agree with me") and (2) rule structured and authority relations ("When I think about rules" and "When I am told what to do"). Respondents are given three minutes to write at least three sentences to complete each of the above five phrases. Each of the five conceptual level stems was coded with a score from 0 to 3 (Stages "Sub 1 to 3") according to a manual developed by Hunt, et al. (1973).

Strong validity and reliability data is reported for the PCT (Hunt, 1971; Schroder, Driver & Streufert, 1967: Gardiner & Schroder, 1972).

Schroder (1967, 1971) found that persons with high conceptual level scores showed less tendency to engage in black and white thinking, greater ability to integrate multiple perspectives, less rigidity of judgment, greater independence of judgment, and greater tolerance of ambiguity and conflict than did groups with lower conceptual level scores. These characteristics have been discriptions of the post conventional moral stages and the high ego stages.

Studies done by Hunt and Associates (see summary in Hunt & Sullivan, 1974) have related teaching styles and teaching characteristics to teachers' stage of conceptual development.

These authors have used two basic methods to obtain a single score from the five stem scores. The "Top 3 CL" score is the average of the three highest scores obtained, and the "Total CL" score is the average of all scores. The "Top 3 CL" method was used in the present study, as it was considered to be more similar to the WUSCT ogive-intuitive Ego score and the DIT P-score methods. Hunt has classified scores which range from .5 to 1.0 as representative of low conceptual level, 1.1 to 1.4 as moderately low conceptual level, 1.5 to 1.9 as moderately high conceptual level, and 2.0 and above as high conceptual level. The PCT questionnaire was scored at the Ontario Institute for Studies in Education by a Hunt-trained rater. Interrater reliability reported by OISE raters is above .90.

Procedure - Developmental Questionnaires/Tests

The developmental test materials were administered on one afternoon in September, 1981, in a group session of all teachers interested in the collaborative research project. One group met at the New Hampshire site and one group met at the Michigan site. The DIT of moral development was followed by the PCT of conceptual level and then by the WUSCT of ego development. For the PCT there was an approximate time limit of 3 minutes per stem; for the DIT and WUSCT there was unlimited time for completion. These were repeated at the end of the project, in May, 1983.

Procedure-Rating Interpersonal Development

Selman's (1980) theory of interpersonal development was used as a way of validating or testing the idea that a person's cognitive developmental stage can be used as a predictor of their perceptions of school context and action research issues and their behavior on the team.

Interpersonal understanding of the team's organization and peer group relations was assessed for each teacher on the collaborative research team using an interview and scoring manual by Robert Selman (1979). Selman (1980) provides a theoretical framework for a theory of interpersonal understanding (perspective taking) and the validity and reliability for his scoring procedures with samples aged 5 to young adult. He has collected data using hypothetical dilemmas and interviews; analyzed data cross-sectionally and longitudinally, and provided additional analysis of judgment related to action. Demographic norms are also provided. Selman cites the need for research on interpersonal functioning from a developmental perspective, in particular the interaction of the relative maturity of an individual's cognitive capability for interpersonal understanding and the individual's ability to function at his or her most competent level under a range of circumstances (Selman, 1980. p. 311).

In this study, all mentions of collaborative team organization and process during the first eight ARCS meetings were excerpted and scored for each teacher according to Selman's seven Group Organization Aspects (group formation, cohesion, conformity, rule-norms, decision-making, leadership, and termination). Each aspect was scored for Interpersonal stage (0 to 4) according to in-depth guidelines in the scoring manual. Scoring Interpersonal understanding of the action research team organization resulted in the following stage-related perceptions: the team as a physicalistic organization (Stage 0); the team as unilateral relations (Stage 1); the action research team as bilateral partnerships (Stage 2); the team as a homogeneous community (Stage 3); and perceptions of the team as a pluralistic organization (Stage 4). The first eight meetings were chosen because of the concern with gathering uncontaminated data on individuals and on the teams before teacher interaction may have influenced individuals' thinking and behaving in the group. Once teachers' comments were scored using these first eight meetings, their statements throughout the two years were examined for consistency or inconsistency with the original scoring.

An average issue score for Interpersonal Understanding was found by averaging the stage scores for all of an individual's responses. The average issue score, global stage score and range of scores was considered when discussing consistency. A person's operating level was judged by documentation notes and participant observation by the researcher and research assistant.

Background: Collaborative Action Research

Action research in education has often been seen as a way of involving teachers in changes which improve teaching practice; when teachers work together on a common problem; clarifying and negotiating ideas and concerns, they will be more likely to change their attitudes and behaviors if research indicates such change is necessary (Hall, 1975; Lewin, 1948). Collaboration provides teachers with the time and support necessary to make fundamental changes in their practice which endure beyond the research process (Elliott, 1977; Little, 1981). Action research is also expected to contribute to teachers' professional growth and to benefit the school or community within which it occurs (Little, 1981; Mosher, 1974; Pine, 1981).

Collaborative action research suggests that each group represented in the process shares in the planning, implementation, and analysis of the research, and that each contributes different expertise and a unique perspective to the process (Hord, 1981; Tikunoff, Ward and Griffin, 1979). (Today's collaborators often include school district teachers and personnel, university faculty or educational R & D center staff, and federal education agencies which provide financial support and guidance.)

Background: Action Research On Change In Schools Project

Action Research on Change in Schools, (ARCS) is the most recent in a series of NIE sponsored research activities on collaborative action research. Previous projects include the original Interactive Research and Development on Teaching Study, (IR&DT) (Tikunoff, Ward and Griffin, 1981), the Interactive Research and Development on Schooling Study, (IR&DS) (Griffin & Lieberman, 1979), and the IR&D projects by Huling (1981). In the ARCS project, university researchers collaborated with the staffs of two public middle/junior high schools. The Michigan team consisted of five teachers from the same middle school, one university researcher, and a research assistant who also documented meetings. In the New Hampshire team were four junior high teachers, one part-time administrator, from the same school, a university researcher, and a graduate research assistant/documenter.

Teacher participants in the ARCS study were selected to represent a variety of developmental stages based on scores from the following three empirical measures: The Defining Issues Test of Moral Judgment (Rest, 1974), the Washington University Sentence Completion Test of Ego Development (Loevinger and Wessler, 1970), and the Paragraph Completion Test of Conceptual Complexity (Hunt, et al., 1973).

Although previous studies have effectively utilized collaborative action research in which both teachers and university researchers join in defining questions and conducting research, this study was unique. The characteristics of teachers according

to their developmental stage scores were used to examine individual teacher participation in and perception of issues related to the collaborative research process.

A variety of data sources were used to record and monitor the process of action research in each team. These included 1) audio recordings of all team meetings and transcripts of selected meeting tapes; 2) written documentation of all team meetings by participant observer (using Schatzman & Strauss, 1973); 3) teacher logs; 4) pre-post questionnaires with participants and other teachers and administrators; and 5) interviews conducted at crucial points in the research process with participants, school administrators, and other school staff members.

Over a period of two years, meeting weekly on-site in the schools, the teams identified and developed research questions that were seen to address their concerns most effectively. As a result, teachers developed their own research questions, conducted appropriate studies, and worked toward programmatic changes. Both teams involved all staff members in their research activities which focused on evaluation studies of school-based scheduling issues and their impact on curriculum and instruction. The New Hampshire team specifically focused on the relationship between staff morale and job satisfaction and a number of organizational changes and practices occurring at their school. The Michigan team included parents and students as well as staff members in examining their school's current scheduling practices and middle school philosophy.[1]

This paper summarizes the effects of the collaborative research activities on the individual teacher participants in the ARCS project which were presented extensively in the final report, (Oja, 1983). The data revealed that the teacher's different developmental stages were shown to be important in a number of dimensions in the team's research focus and group process including, 1) teacher's goals for the project, 2) attitudes toward a change process, 3) authority and group leadership, and 4) teacher's percieved outcomes from the project.

One of the complexities of doing collaborative action research is working with a diverse set of teachers. This diversity makes the experience both difficult and, to say the least, intriguing. Teachers at different conceptual and developmental stages view the tasks, group process, and research process[2] of a collaborative research team differently, and these teachers come to the team with various strengths and weaknesses, to a large extent related to their developmental stages.

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[1]Copies of the team's final reports on their studies can be obtained from the project office at the University of New Hampshire.

[2]The research process consists of the steps taken by the team in carrying out its research tasks while the group process includes the patterns of interaction developed as the team works through its research process.

Background: Staff Development/Adult Development

A recent paper investigated the unique perspectives and skills which the university researchers, in interaction with the teachers, contributed to help the two ARCS collaborative research teams identify their research and achieve their goals. The university researchers' roles and interventions contributed to an effective and efficient group process; established norms of support for risk-taking and role-changing; and broadened individual perspectives by probing the teachers experience bases. (Oja, 1984). In this analysis it was found that the researcher's natural style was supportive for some teachers, challenging for others, and sometimes ineffective in meeting an individual teacher's needs. Flexibility was needed in the researcher's ability to initiate interventions and to adapt his/her roles as facilitator, supervisor, and research model to meet the individual, professional, and context specific needs of the teachers involved. Analysis revealed that teachers at different developmental stages responded differently to the researcher's roles and interventions.

To function at higher stages of development, an individual must be supported and challenged according to the characteristic needs of his/her stage. Staff development has generally failed to simultaneously address the dual needs to challenge and to support learners. If growth is to occur, then a person needs both a challenging learning task and intensive personal support for the requisite risk-taking. Furthermore, challenges and supports to new learning differ at each stage. Often the supports to new learning at one stage are, in fact, the challenges to learning at a previous stage. Because new learning and change is conceptualized differently at different stages of development, the probability of success is increased when the challenge and support factors in the environment are matched with the challenge and support needed by the individual at a certain stage of development.

Knowledge of the characteristics of the conventional transitional, goal-oriented, and self-defining[3] stages of development might enhance the university researcher's ability to recognize and facilitate or intervene effectively in team issues concerning consensus or conflict in team decision making

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[3]The author has utilized the terms conventional, transitional, goal-oriented and self-defining to describe four different teacher stages. They correspond respectively to the Conformist, Self-Aware, Conscientious, and Individualistic ego development stages defined by Jane Loevinger (1976). See Oja (1980) for a concise review of adult developmental theories as they apply to staff development.

regarding goals and outcomes, assets and limitations of teacher's attitudes toward change and the process of school improvement, as well as the dimensions of individual teacher participation within the collaborative action research team activities.

Description Of Teachers On The Two Collaborative Research Teams

Participants for the two collaborative research teams were selected to represent a diversity of cognitive-developmental stages based on their scores on the three empirical measures of developmental stage, the Loevinger WUSCT, the Hunt PCT, and the Rest DIT. Since there are no single valid measures, an overlapping assessment was employed with the three tests serving as proximate measures. Each is viewed as an indicator of how each person processes or makes meaning from experience by developmental level. The Loevinger largely assesses how an individual thinks about or conceptualizes about self; the Hunt asseses how a person conceptualizes issues of teaching and learning; and the Rest assesses how a person processes social-justice questions.

A working hypothesis emerged in Year 2 as a result of observation of the teacher's behavior and perceptions in the collaborative group process: a teacher's level of interpersonal awareness and sensitivity affects the organization and process of the collaborative research team. The area of interpersonal sensitivity cannot be readily extracted from the data base provided by the three developmental tests mentioned above. Thus a fourth measure, the Selman assessment of interpersonal functioning, was added to the data base and used as a cross check in the analysis of teacher's perceptions regarding the issues of change in the context of the classroom and school, group process, leadership, the principal, and goals/outcomes of the action research.

Table II presents the teacher's scores on each of the four assessments of development and provides information to interpret the developmental test scores.

The objective of the research project was to investigate teachers' perspectives at different developmental levels. The New Hampshire team's data was chosen for in-depth presentation in the final report. Comparison and contrast with Michigan team members was presented in summary form.

The teachers' perceptions regarding a variety of issues in the collaborative action research process and within one school context is presented in the findings to address the question of qualitative differences between developmental stages.

Analyzing data on individuals without contamination by the thoughts or behavior of other team members was a concern. For instance, as a group coalesces, the conformists will tend to conform to the rhetoric level of the group, and they are not really asked to generate problem solutions in ambiguous situations.

Table II

Cognitive/Developmental Stage Scores

	Sex	Yrs. of exp.	Ego Level WUSCT TPR Score[a] Pre	Ego Level WUSCT TPR Score[a] Post	Cognitive Complexity PCT CL Level[b] Pre	Cognitive Complexity PCT CL Level[b] Post	Moral Judgment DIT %P Score[c] Pre	Moral Judgment DIT %P Score[c] Post	Moral Judgment DIT Stage-Type Score[d] Pre	Moral Judgment DIT Stage-Type Score[d] Post	Interpersonal Sensitivity Global Stage Score[e]
NH Team Teachers											
Conventional*	M	17	5	-	1.8	-	32%	-	3	-	1(2)
Transitional T-1	M	15	6	6	2.3	2.3	63%	62%	6	6	3
Goal-Oriented GO-1	M	19	7	7	2.0	2.0	46%	43%	4	6	2(3)
Goal-Oriented GO-2	F	8	7	7	2.0	1.7	40%	53%	4	5	4
Self-Defining	M	11	8	8	2.2	2.0	75%	62%	5	6	4
MI Team Teachers											
Transitional T-2	M	9	6	6	1.8	2.0	25%	15%	4	4	2
Transitional T-3	F	12	6	6	1.5	1.7	32%	27%	3	3	3
Transitional T-4	F	10	6	6	2.0	1.2	43%	28%	-**	4	3(2)
Goal-Oriented GO-3	F	23	7	6	1.7	1.2	32%	25%	4	4	3
Self-Defining*	F	16	8	-	2.0	-	58%	-	6	-	3

*The Conventional teacher in NH and the Self-Defining teacher in MI left their teams after the end of Yr1 of the project.

**No dominant stage

abcde stage score interpretation, see page 2 of Table II

Pre-tests taken 9/81; Post-tests taken 6/83

Table II continued

Cognitive/Developmental Stage Score Interpretations

a. The WUSCT ego level scores have been transformed into a 1-10 interval value according to the following convention:

Interval Value	Ego Level
1	Presocial
2	Symbiotic
3	Impulsive
4	Self Protective
5	Conformist
6	Self Aware
7	Conscientious
8	Individualistic
9	Autonomous
10	Integrated

b. Hunt's Completion Test of Conceptual Level generates scores that can range from 0 to 3. Scores of 1, 2, or 3 on this test may be interpreted as indicating the following conceptual levels:

Score of 1 = Categorical judgments, stereotyped thought. Other directed; accepts single rules.

Score of 2 = Self-delineation, awareness of alternatives, and awareness of emotions.

Score of 3 = Abstract internal principles, awareness of multiple viewpoints.

Hunt has classified CL scores as follows:

0.5 to 1.0 = low CL score
1.1 to 1.4 = moderately low CL score
1.5 to 1.9 = moderately high CL score
2.0 and above = high CL score

c. The %P score represents the percent of principled moral judgment responses (Stage 5A, 5B, and 6) in the person's total responses. Rest and Davidson (1980) have classified scores into quartiles:

0 - 38% = low P score
39% - 58% = moderately low P score
59% - 77% = moderately high P score
78% - 99% = high P score

d. Rest's DIT scoring manual describes how the profile of a person's responses to the DIT can be converted by formula to a Stage-type moral judgment score for comparison to Kohlberg's stages of moral development.

DIT Stage-type: 1 Punishment-obedience orientation
Stage-type: 2 Instrumental egoism and exchange
Stage-type: 3 Approval oriented
Stage-type: 4 Authority role, and social order oriented
Stage-type: 5A Social contract, utilitarian legalistic orientation
Stage-type: 5B Higher law and conscience orientation
Stage-type: 6 Moral principle orientation

e. Selman's interpersonal stage score represents the global stage score of group organization and process:

Stage 0: physicalistic organization
Stage 1: unilateral relations
Stage 2: bilateral partnerships
Stage 3: homogeneous community
Stage 4: pluralistic organization

To counteract this, it was decided to concentrate the initial analyses on the beginning parts of the two-year project before teachers might become socialized to the rhetoric to see if teachers' key words and phrases would show structural differences related to their developmental stage scores.

The structural characteristics of the early talk was also chosen because both university researchers had agreed to perform the same roles during the initial eight meetings (first three months of the study), primarily stepping back from any direct leadership function to a maintenance position which encouraged teachers to discuss their classroom and school contexts, possible problems or issues to be researched, and their individual choices for research topics and methods. Thus, both university researchers were following the same formats in the beginning; and later on when it became apparent that there were some differences in leadership styles, the reason was reinforced to look to early meeting transcripts for how the individuals approached the problem-solving sessions.

After the early transcripts were analyzed, the results were compared to the teacher's actions and perceptions in the duration of the project.

Teachers were referred to by self-chosen alias names in the final report in order to protect their confidentiality. In this paper the teachers will be referred to as conventional, transitional, goal-oriented, and self-defining to focus on the characteristics of these different stages of development.

Teachers in the collaborative research teams vary over four consecutive ego level stages: The Conformist Stage, the Self-Aware Transition, the Conscientious Stage, and the Individualistic Transition. Teachers scored at moderatley high or high levels of conceptual complexity, and they scored at low, moderately low, or moderately high levels of principled moral judgment. (See Table II).

Table II also indicates that there is not a clearly systematic relationship between ego level and conceptual level or moral development level (at least as measured by the PCT and the DIT). Jane Loevinger states that a certain stage of moral development is a necessary prerequisite, but not a sufficient condition, to predict a parallel stage of ego development, (Loevinger, 1976). Data in Table II shows that teachers at one stage of ego development do not necessarily score in a manner similar to one another on the other scales except at the extremes; i.e., the conventional teacher and the self-defining teacher's stages indicate more similarity between scores on the separate scales.

Seven of the selected teachers scored at the Self-Aware or Conscientious ego stage, four in the Michigan collaborative action research team, and three in the New Hampshire action research team. For comparison purposes, note that Redmore and Waldman (1975) indicate that for an adult group a typical

distribution would be that 90% of the WUSCT ego scores are at these two stages. McCrae and Costa (1980), in a random sample of adult males, ages 35-80, found 83% scored at either the Self-Aware or Conscientious ego stage. In four previous studies with persons aged 11 ty 60, more persons scored at the Self-Aware stage than at any other stage (Haan, et al., 1973; Harakel, 1971; Lambert, 1972; and Redmore & Waldman, 1975). A previous study with 30 teachers aged 23 to 58 indicated that 87% of the teacher sample scored at the Self-Aware or Conscientious ego stage with one-third classified at the Self-Aware ego stage, and 53% classified at the Conscientious ego stage (Oja, 1982). In this study, as in the previous studies with teachers (Oja, 1978; Oja, 1979), the highest score on the WUSCT ego test documented in pretest data was the Individualist ego stage.

The purpose of the project was to observe how teachers at different developmental stages approach the collaborative research process. Thus deliberate differential developmental interventions to promote individual teacher's stages of development were not formally instituted. It is not surprising, therefore, that there was no major gain in pre to post testing. (Slight decreases pre to post are expected and often occur with these developmental tests).

The only change in ego level occurred for the Goal-Oriented teacher on the MI team (GO-3). The rating of 6 (Self-Aware stage) on the post test was a compromise score given by the rater who suggested that this teacher had an inconclusive protocol, with 5 blank stems, 2 stems scored at stage 4 (Self-protective) or below, and then 7 stems scored at stage 7, the Conscientious stage. The rater suggests that the post test protocol may not be a reliable sample of this teacher's core functioning.

The next section of this paper compares the teachers at different stages of development, and the subsequent section compares the two teams in terms of average scores and homogeneity or diversity of scores.

The NH team represents high conceptual level scores and the MI team moderate CL scores. Even with fairly similar, high, conceptual level scores, teachers on the NH team differed from each other in significant ways which can be described by their ego development scores. Therefore, this paper concentrates its examples (in the final two sections of the paper) in the diversity on the NH team.

Comparison: Teachers Stages of Development

Individual teachers on both the NH and MI collaborative research teams were selected to represent a variety of developmental stages. Table II lists the cognitive/developmental test scores individually for each of these teachers, while Table III presents a brief interpretation of these stage scores. The following analysis is based upon the data presented in these two tables.

Individual Teacher Perspectives

Conventional Teacher

The one conventional teacher in the ARCS Project scored at the conformist ego stage, with a moderately high conceptual level (CL), a low percentage of principled thinking reflecting stage 3 moral development, and an interpersonal stage 1(2) indicating unilateral/bilateral partnerships. This conventional teacher perceived change as an external process, a simplistic way of solving problems. According to this perspective, change was viewed as a one shot episode rather than as a process over time with past, present, and future implications. Teachers who exhibit such a conventional perspective seem to be more concerned with issues of authority and control, with minimizing controversy, and with maintaining rules or implementing policies than with questioning the purposes of these rules/policies. While discussing the value of participating in the ARCS project, for example, the conventional teacher said:

> "Well, just sitting and talking with other people, getting their ideas...these are the individual benefits. Even if they're accidental, they're still benefits."

Later, when talking about goals for the team's project, this teacher also suggested that each person should participate for his/her own "personal satisfaction". Then, he added, "...it would be 'fantasy island' to think that the administration would get involved or support the team."

Scoring near the bilateral interpersonal stage, the conformist teacher tended to resort to arguments based on his authority, knowledge, and control, which came from his position as a part time administrator. Consistent with his stage perspective, this teacher also viewed the role of the university researcher as arbitrator and organizer of interests in the group. The researcher, he said, "...has more knowledge and expertise...must hand guide our team in actually carrying out the research processes and methods." Although the conventional teacher in the ARCS Project left after Year 1 to assume a principalship in another school district, he continued to stress the team's need for more direction in his final interview.

"As time went on, I think you (university researcher) realized that we weren't heading in any direction on our own. He needed you to give us more direction and leadership..."

However, team meeting transcripts and documentation from the second year of the ARCS Project, indicate that the conventional teacher's absence actually enhanced the NH team's ability for self-direction and goal achievement.

Transitional Teachers

According to the data reported in Table II, three MI teachers and one NH teacher functioned at the transitional stage of cognitive development. In order to distinguish one from another, the transitional teachers are designated T-1 (NH); T-2, T-3, and T-4 (MI).

All of the transitional teachers in the ARCS Project scored at the self-aware stage of ego development. However, only two teachers, T-1 and T-4, scored high in conceptual level while the other two, T-2 and T-3, had moderately high CL scores. On the moral judgment measure, only the NH teacher (T-1) scored at a moderately high percentage of principled thinking reflecting stage 6 moral development. In contrast, teachers T-2 and T-3 earned low scores and teacher T-4 a moderately low score in moral judgment reflecting stages 3(4), an approval or authority orientation to moral development. In interpersonal development, teachers T-1, T-3, and T-4 all scored at stage 3 reflecting a homogeneous community perspective, while teacher T-2 scored at stage 2 indicating a bilateral partnership orientation.

As their scores indicate, all four of these teachers, in transition between the prior Conformist ego stage and the subsequent Conscientious stage, exhibited increased self-awareness and a beginning appreciation and understanding of multiple possibilities or alternatives in problem solving situations.

Although their feelings were expressed in vague or global terms, these transitional teachers demonstrated a growing awareness of inner emotions and an enhanced capacity for introspection. Characteristic of the self-aware stage of development, needs for group acceptance continued to supercede individual needs for some of the teachers. For example, teachers T-1 and T-3 stressed that fulfilling the needs of others was their goal for this Project, rather than any personal gains they might earn from participating. However, teachers T-2 and T-4 did emphasize career goals and growth which would benefit both themselves and the school as a whole. This difference among perceptions of teachers scoring at the same developmental stage was not surprising given one of the teacher's (T-1) inability to assume team task responsibilities, while the other teachers demonstrated high commitment and involvement in project tasks. Perhaps this difference also reflected the movement of at least two self-aware teachers (T-2 and T-3) toward the Conscientious stage of ego development.

Goal Oriented Teachers

Two NH teachers and one MI teacher in the ARCS Project functioned at the goal oriented developmental stage. In order to distinguish one from another, these teachers are designated: GO-1, GO-2 (NH); and GO-3 (MI).

The three goal oriented teachers in the ARCS Project all scored at the Conscientious stage of ego development. Both NH teachers, GO-1 and GO-2, scored high in conceptual level, while the MI teacher, GO-3, had a moderately high CL score. On the moral judgment measure, teachers GO-1 and GO-2 showed moderately low percentages of principled thinking, while GO-3 showed an even lower percentage. In terms of moral development, all three goal oriented teachers scored at stage 4 reflecting an authority and social order orientation. The greatest range of scores among the conscientious teachers appeared in their interpersonal stage scores of group organization and process. Teacher GO-1 functioned at stage 2(3) indicating a bilateral partnership orientation; teacher GO-3 was at stage 3 reflecting a homogeneous community score; and GO-2 represented stage 4 or a pluralistic organization perspective.

Each of the goal oriented teachers seemed capable of self-criticism, and internalizing rules. Guilt was the consequence of breaking inner rules, while exceptions or contingencies were recognized in direct relation to a growing awareness of the subtleties of individual differences. These conscientious teachers viewed behavior in terms of feelings, patterns, and motives rather than simply actions. Achievement, especially when measured by self-chosen standards, was crucial. In fact, many of the comments made by these teachers during team meetings illustrated a preoccupation with obligations, rights, traits, ideals, and achievement defined more by inner standards and less by the need for external recognition and acceptance.

One specific value in the ARCS Project noted only by the goal oriented teachers was the use of individual logs to vent anger or record frustrations and hopes. One goal oriented teacher (GO-1) said: "My log helped me to channel my frustrations and keep them out of the classroom."

Although this same teacher often felt confident and assertive about his opinions, his extreme stability sometimes caused rigidity toward change in general. In order to solve the problems he saw as the team's goal, GO-1 tended to find and use formulas, seeking the rules or laws which governed behavior and interaction in the system. While this allowed him to work on the problems identified by the group and move the team along, it prevented him from looking at alternatives or subtleties in problem situations. However, this teacher completed the school history and became the spokesperson for the NH team, serving as their liaison to the school and school system administration.

For several reasons, the second goal oriented teacher (GO-2)

manifested the Conscientious stage characteristics quite differently than either of the other two teachers who shared this stage. First, GO-2 was in transition to the individualistic stage in some dimensions of her thinking. Second, she had considerably less experience in this school than GO-1. Third, she was a woman and her interpersonal orientation had not yet provided her with power. However, she initiated to a large extent the team's concentration on its research questions/design, and she used team meetings as a forum within which her concerns about teaching and work could be voiced. For GO-2, the ARCS Project was a set of resources available to help her cope with changes. She realized that the issues causing her stress in school were not going to change, so she had to change. This meant moving toward her own system of internal reinforcement. The confidence and skills that this goal oriented teacher gained from the Project, plus her deeper appreciation for individual differences, the contributions of team members, and the principal's job in the school/district, all helped her define her own self-system more clearly, especially in terms of the reality of school context issues and decision making.

Although sharing many of the same general stage characteristics, the third goal oriented teacher's (GO-3) personal growth and development during the ARCS Project was significantly influenced by several school context issues. For example, at the beginning of the Project's second year, GO-3 felt that her professionalism (self-system) was being challenged when she was mandated to participate in a specific staff development program. After this incident, analysis of team meeting documentation revealed that this conscientious teacher seemed to withdraw from the group by lowering her expectations and commitment in order to guard against further challenges to her self-system. Another important issue for GO-3 was her loss of the self defining or individualistic teacher who left the MI team after the first year of the Project. In both team meetings and her logs, GO-3 said she "...had looked to the self-defining teacher as a resource and a catalyst for her own thinking about new perspectives."

Self-Defining Teachers

The two self-defining teachers in the ARCS Project scored at the individualistic stage of ego development, and both achieved high conceptual level scores. On the moral judgment measure, the NH teacher earned a moderately high score, while the MI teacher's score was moderately low. However, both self-defining teachers fell into stage type 6 moral development reflecting a high percentage of principled thinking. One obvious difference between the two individualistic teachers appeared in their interpersonal global stage scores. The MI teacher's stage 3 score reflected a homogeneous community orientation, while the NH teacher's stage 4 score indicated a pluralistic organization perspective.

Although the self-defining teacher from MI said she left the team after the first year because her perspective was represented by others, team meeting documentation indicated that her

perspective on school, classroom, and teaching/learning issues was quite different from other team members. For example, she said, "All of us including myself lose sight of the kids because time and production become so important." It was this self-defining teacher who consistently brought the student perspective to the MI team. In addition, she was often concerned with becoming more of her own person with "autonomy and harmony" and less dependent on colleagues, spouse, critics, or mentors. She said: "I've been dependent too long."

Although her test scores were similar to those of the self-defining teacher on the NH team, analysis of this teacher's interpersonal understanding scores revealed that she saw the group as a homogeneous community, while the NH teacher viewed the team from a pluralistic perspective. The MI teacher, therefore, regarded loyalty to the group and interpersonal relations as based upon common ground (homogeneity of values). When her views were different from the rest of the group, she had to make a choice in order to remain totally committed to the Project. Had she been able to view the group from a pluralistic perspective, she may have been able to remain on the team and find a successful compromise which would have enabled her to use and enhance her skills and her differences on the team.

The self-defining teacher on the NH team demonstrated an increased ability to tolerate paradox and contradiction along with greater conceptual complexity shown by his awareness of discrepancies between inner reality and outward appearances, between psychological and physiological responses, and between process and outcomes. This individualistic teacher defined group leadership as including multiple functions requiring more than one kind of leader for specific tasks. He saw himself, the university researcher, and other team members assuming various tasks as different needs arose.

The NH self-defining teacher said he hoped the team would "generate data" and "produce new information". He became very active in creating computer programs for data analysis, and pushed the team to outline and begin work on its final report. Once the ARCS Project ended, this teacher continued to investigate the possibilities of further graduate study. Not limited by the definitions of duties, performances, or work roles dictated by the school, he has redefined his career. In this respect, the NH self-defining teacher may be viewed as entering the post-conventional system where an interdependent self-definition retains primary focus, and self-actualization becomes the goal.

Comparison: Team Average Stage of Development

Although it was not the intention of the ARCS project to provide differential interventions to promote individual teacher growth and developmental stage change, it became apparent in the second year of the project, after one teacher on each team had left, that the two teams differed markedly in their combined group average stage scores.

The following Table IV presents the group stage scores both before and after one member left each team. Average group scores in both the tables and their interpretation are discussed in terms of year one and year two to illustrate the differences in team membership. (One member left each team at the end of year one before year two began.)

Both teams began with the same average ego development score of 6.6, the Self-Aware Stage. When each team lost one member, the average group scores reflected almost a full stage difference with the NH team average at 7.0, the Conscientious Stage and the MI team at 6.25, remaining even closer to the Self-Aware Stage. In addition, the MI team was more homogeneous with the remaining individual's ego scores of 6,6,6,7 compared to the NH team range of 6,7,7,8. As the comparison of stages in Table I shows, scores of 6 and 7 still indicate a Conventional Stage perspective, whereas a score of 8 represents a shift to the Post Conventional Stage perspective, a qualitative change of significant difference.

Average conceptual level scores for each team also differed in year one, but did not change as number of group members declined in year two. The NH average reflects high conceptual level and the MI team reflects moderate conceptual level.

Moral judgment scores illustrate a big difference between teams even in year one with NH average 66.2% P, moderately high, and the MI score at 38% P, low. At year two with four teachers on each team, the difference is even greater, with NH average at 74.8% P and MI at 33% P.

Interpersonal Stage, too, showed a different average score in year one with the NH team average at stage 3, homogeneous group relations, and the MI team average at stage 2(3) indicating a predominant average stage of bilateral partnerships with a subdominant stage of homogeneous relations. Neither group's average interpersonal stage score changed after one member left each team. The range of individual interpersonal stage scores in the second year is much greater in the NH team (2,(3), 3, 4, 4) compared to the MI team (2, 3(2), 3, 3).

In summary, the two teams were different from each other on all but ego score at the beginning of the project, and on all average stage scores in the second year after one person had left each team. In addition, the NH individual scores both in

Table IV

Comparison Of Two Collaborative Action Research Teams

Average Score For Each Collaborative Research Team

Year 1	Ego Level	Conceptual Complexity	Moral Judgment % Principled Thinking	Interpersonal Sensitivity
NH	6.6	2.1	66%	3
MI	6.6	1.8	38%	2(3)
Year 2 (After 1 member left each team)				
NH	7.0	2.1	75%	3
MI	6.25	1.8	33%	2(3)

*Averages were calculated from the individual teacher's pre-test scores on each developmental test. The team average should also be considered in light of the diversity of the NH team as opposed to the relative homogeneity of the MI team (See Table II).

year one and two exhibited a greater range of scores while the MI team in year one and especially in year two exhibited a restricted, more homogeneous, range of scores.

The intent for the role of the university researcher in each team was to be a facilitator to the team's group and research process. The purpose of the original research project was to observe and report how teachers at different developmental stages participated in a collaborative action research project.

If the project had had an additional goal of intervening to promote individual developmental stages of growth, it seems that the roles of the university researchers would need to be modified and/or expanded to accommodate this focus.

In both teams, the researchers used their skills to promote group interventions which were geared to the average team score. In this context, the MI researcher was able to consistently support and reinforce individuals at the same time as he focused on the group, since this team's average stage score, the Transitional Stage, was basically homogeneous. Likewise, the NH researcher directed most of her interventions to the average group stage score, the Goal-Oriented Stage. However, in both teams such a natural focus proved unsuccessful in meeting the developmental needs of individuals at certain times in the research process. Developmental growth involves both support and challenge. If the goal in each team was developmental growth, other interventions which reflect challenge at differential stages would be necessary.

In the NH team, because of the diversity of team member's stages of development, that challenge did exist at times even without the researchers' planned intervention. However, in the Michigan team, the homogeneity of members' stages of development, especially in year two, did not provide such spontaneous opportunities for challenge.

The case studies of individual teacher perspectives and behavior around a certain issue which follow are of two kinds; first examples involving one team discussing a specific issue in which all individuals were supported and some individuals were both supported and challenged to broaden their perspective. The second set of examples are of situations in which individual teachers were or should have been offered specific differential interventions.

A brief glimpse into each teachers' perspective of authority and group leadership begins the next section. These case studies are followed by excerpts from a team meeting. The team interaction and the university researcher's comments in the excerpts are analyzed to determine which interventions were supportive or challenging for which teachers.

Case Studies
Authority and Group Leadership

This section will discuss the leadership roles assumed by NH team members, their reaction to the university researcher's authority/facilitator role, and to the principal's involvement. Each individual's perceptions and actions are explained in terms of developmental stage theory as one way of raising questions and issues for a university researcher who chooses to become involved in a collaborative action research team.

A Conventional Perspective

The conventional teacher was first to assume team leadership. As both a teacher and an administrator for 17 years in the school, he exhibited confidence and knowledge about the workings of the school. This experience plus his need for concrete plans allowed him to push the team forward in choosing a research topic and carrying out its initial staff survey. He also performed concrete tasks for the group such as collating survey results. In the spring of its first year, as the team began to focus on its research question and design, the conventional teacher moved out of the leadership role. He noted that he knew little about "research", and he became less of a moving force on the team. He left the team at the beginning of the second year when he assumed a principalship in another district.

At the conventional stage of adult development, this teacher tended to base his statements on the authority, the knowledge, and the control which came from his long-held position as part-time administrator. He expected that the university researcher as team leader would organize the interests of the group. He also said the university researcher should direct the group because she knew more. In general, he felt that it was a mistake for principals to ask teachers for their opinions and then do the opposite; he felt it would be better if principals just told teachers what they were going to do in the first place. The university researcher* working on a collaborative action research team needed to consider the conventional teacher's expectations for directive leadership without neglecting the collaborative process among all team members which leads to effective problem solving and staff development.

A Transitional Perspective

The transitional teacher was the only team member who did not assume a leadership position at some point during the two year project. He was, in fact, only peripherally involved in much of the team's work, although he attended most of the meetings. This teacher carried out the research tasks performed by all team members, and he noted that he contributed "ideas and suggestions...and enthusiasm" to the project. His minimal involvement in the research task frustrated goal-oriented team members

*A staff developer or principal/school leader with research skills might also take on these roles.

who eventually began to ignore his questions and comments. The transitional teacher felt that the group had focused on a research topic which would have little impact on other teachers. He ultimately felt less positive than other team members about the value of the project for himself and the school.

This teacher, at the transitional stage between conventional and goal-oriented development, believed the leader's role in the action research team was to keep the group together and on task. He attributed leadership to the conventional teacher as a result of that teacher's dominant position as an administrator, and he attributed leadership to the university researcher as an authority in terms of her knowledge and skills. He looked to the university researcher to make final decisions on the research task and process. The transitional teacher wanted the principal to be involved with the action research team but said, "We still don't have to use his ideas." The university researcher organizing this collaborative action research group, needed to balance this teacher's need for task direction with his global concern for group autonomy.

A Goal-Oriented Perspective

Two goal-oriented teachers joined the team, one male, one female. The male goal-oriented teacher began the project explaining, "I just like to talk and discuss, so that's what I do." He was a willing participant in discussions of school context and research problem identification and frequently lent a historical perspective to the issues, given his status as an 11-year veteran of the school. This goal-oriented teacher participated less as the team concentrated on research methodology, feeling that he lacked the skills and expertise needed to contribute to his aspect of the team's work. During the second year, however, he emerged as a team leader again in his ability to "see some of the long term things that we are doing and...push in that direction." Although he helped analyze data and prepare the team's final report, this goal-oriented teacher's primary role during year two was to clarify the project for other team members and for the school principal and assistant superintendent. He emerged from the two year project with a strong belief in the value of the collaborative process for addressing school-based problems.

From his "goal-oriented" stage, he saw the team leader as a catalyst who helped to energize rather than direct the group. He perceived the university researcher as a research authority and asked her questions about research design and issues of sampling and validity as he actively sought to learn more in order to contribute more to the team. This goal-oriented teacher approved of the researcher's facilitative behavior, which allowed group members to define and develop ownership of the project, but there were times when he would have preferred that she make

the group come to decisions to move along more quickly. Despite the fact that it was this goal-oriented teacher who kept the principal informed about the team's progress, he felt it was the principal's responsibility to become more involved in the team's work if the principal was interested. The university researcher working with this team recognized the tension between this teacher's need for guidance in the new area of research skills and his confident perception that teacher self-direction leads to understanding, ownership, and success in the project.

The female goal-oriented teacher participated on the team in two ways. First, her interest in the area of teacher morale and her knowledge of research methodology influenced the team's choice of topic and research design. She drew on her previous experience in research and guided the team as it designed its research project and collected data. Second, she used the team as a forum within which she could discuss stresses she felt as a classroom teacher. Her contributions to the team, her guidance during the implementation of the research project, and her use of team meetings to work through personal concerns, made this teacher value the action research experience both personally and professionally.

In transition from a "goal-oriented" to a "self-defining" developmental perspective, this teacher understood that group leadership changed depending on members' differing interests and skills. She did not want the university researcher to tell the group what to do but admitted some initial discomfort with the researcher's indirect or facilitative role. Although she ultimately saw the university researcher's role as the best possible one, she, like the transitional teacher and the male goal-oriented teacher, thought that the university researcher might have done something more. For her, the "more" was teaching research. Although she was becoming less dependent on external approval from the principal, she believed that the team's project needed to be sanctioned by the principal if it was going to "work". Thi s goal-oriented teacher expected the principal to recognize and support both her individual concerns and the team's goals and achievements.

A Self-Defining Perspective

Of all the team members, the self-defining teacher was best able to see the action research team involved in an evolving, dynamic process. During the first year, he often summarized for the group what it had done and where it was going. He frequently volunteered to complete specific research tasks, such as drafting surveys, in his willingness to help the group move ahead on its project. During the second year, he took primary responsibility for designing computer programs for data analysis and task responsibility for writing, with group input, much of the team's final report. At the end of the project, the self-defining teacher talked about forming or joining another collaborative action research team to study its process and direction over time.

At the "self-defining" stage, this teacher saw the group consisting of individuals who could maintain their diversity while uniting behind common goals. He believed group members took on varying leadership roles depending on their differing interests and skills as the group's task and focus changed. He consistently valued the role the university researcher took as facilitator rather than director. He felt comfortable suggesting tasks to all team members including the university researcher when an individual seemed to have particular expertise in that area. The one issue which was still unresolved for the self-defining teacher at the end of the project, was the principal's involvement. Although he did not want the group to be controlled by the principal's ideas, he eventually recognized the need for substantive principal involvement if the team's research results were to improve the school. This self-defining teacher eventually recognized that principal involvement on the school-based action research team was crucial, but he expected the principal to be a colleague rather than a directive leader.

Issues With The Principal's Involvement

The teachers on the NH team represented a diversity in their perspectives about the role of the principal in relation to issues of change in the school and issues in the collaborative research process. Table V presents representative short summary comments from each teacher. Understanding the different perspectives helps to clarify teacher statements made in a team interaction in year two (See Table VI), when they were discussing the issue of how to share research outcomes with the principal.

The interaction in Table VI illustrates the following university researcher's interventions. The researcher asks a probing question to stimulate further discussion. She stresses negotiation and the need for teachers to learn to use channels of power in the school. She supports teachers suggestions about possible solutions to the dilemma of the principal's reaction; i.e., inviting him to meeting, rewriting the controversial last paragraph in question, etc. Finally the researcher summarizes consensus of the group regarding changes in their report and the invitation to meet with the principal.

Analysis of the example interaction in Table VI suggests possible alternative interventions which would have additionally challenged teachers at different stages to think in broader terms by reflecting on their own perceptions and their experiences thus far in the project. Discussing the principal as a "channel of power", the researcher could have addressed the team's needs for including the administrator in a significant way earlier in the project. This discussion could focus on how the principal's early inclusion (which all team members had vehemently rejected at the beginning of the project) could have influenced the team's ability to transfer their research into practice, an objective the goal-oriented teachers wanted very much.

Table V

Issue of Role of Principals (As Change Agents)

Team Member	Comment	Developmental Analysis
Conventional Teacher	It is a mistake for principals to ask teachers for their opinions and do the opposite...It would be better in the first place just to tell teachers what was going to be done.	This conventional teacher, also a part-time administrator at the school, expresses a view that agrees with his earlier statement that the role of the principal is to "pull the trigger" and order unilateral change.
Transitional Teacher T-1	The principal has had little effect on change...teacher committees are in the front when it comes to setting policy. Information flows upward and downward to principal...another person could use this position to become a more forceful advocate for change.	No other teacher on this team shares this transitional teacher's view on teacher committees and their impact. He seems to perceive a different reality, and to explain his perceptions differently.
Goal-Oriented Teacher GO-2	The principal runs the school. He can choose others to assist, but the final decisions are his. He can initiate and/or support changes or choose not to do so.	This goal oriented teacher's comments seem contradictory; i.e. principal can make a difference, but chooses not to here.
Goal-Oriented Teacher GO-1	The principal triggers the elements of change...staff, schedule, budget allocations, school climate/interpersonal relations. These can be transmitted formally by the principal or informally by what the staff sees as decisions the principal may influence.	A goal oriented teacher, in transition to the self defining stage is able to articulate the principal as one who triggers change, rather than controls change.
Self-Defining Teacher	The principal's voice is one of many to be considered and his/her changes are only one set of ideas to be considered in initiating changes in a school. The principal is a resource rather than a deciding or controlling force.	Self-Defining teacher views principal within larger context/system, as one who should help the group reach their common goals.

Table VI

Issue Of Sharing Outcomes Of Project With Principal

Team Member	Comment	Developmental Analysis
Goal-Oriented Teacher GO-2	The Administration doesn't feel any ownership in our project.	Teacher raises some question posed by researcher earlier.
University Researcher	Is the principal reacting to things in our report?	
Goal-Oriented Teacher GO-2	Personally I feel we should invite him to a meeting... let him know what we've found and let him react...	This Goal-oriented teacher presses for ways to include administrator.
Transitional Teacher T-1	He has all the stuff...our report, findings, etc. He could have come to any meeting.	Consistent with this transitional teacher's definition of principal's role...little effect on change.
University Researcher	Do we need to decide as a group not to put him at odds with us?	
Self-Defining Teacher	Maybe we should change our last paragraph...	Teacher suggests possible cause/solution to administrator's reaction.
University Researcher	We could rewrite that last paragraph...inviting him to a specific meeting could also be a positive statement; our wanting his input.	
Goal-Oriented Teacher GO-2	I don't believe he even read our report yet.	
Transitional Teacher T-1	He already knows we're willing to share and discuss it with him...	Consistent with this transitional teacher's view that information flows upward and downward to Principal who is in the middle...not the team's problem.
University Researcher	For a number of reasons, you chose not to involve him in this project...but now you need to go through the power channels to get something done.	

Tabe VI Continued

Team Member	Comment	Developmental Analysis
Goal-Oriented Teacher GO-1	I'd be willing to speak with the principal...	Offers to act, but as this Goal-oriented teacher has said previously, the decision of the principal to be involved or not is his own.
Transitional Teacher T-1	We should decide on something though, in case of a disagreement with him...	Expedite conflict, consistent with this teacher who sees all conflict as negative and to be avoided.
Goal-Oriented Teacher GO-1	Well, we are willing to change words here or there.	
University Researcher	So minor "editorial changes" are okay...let's look at that last section now, and plan to meet with him next week.	

The above examples illustrate the following researcher interventions:

- asks probing question to stimulate further discussion.
- stresses negotiation, and need for teachers to learn how to use channels of power.
- supports teacher suggestions/possible solutions: Invitation to meeting, rewriting last paragraph, etc.
- summarizes consensus of group regarding: Changes in report and invitation to meet.

Analysis of this example suggests the following possible alternative interventions:

- addressing needs for including administrator earlier in project, discussing principal as "channel of power".
- responding more specifically to Transitional Teacher's feelings and reactions to including principal.
- discussing how principal's early inclusion could have influenced team's ability to transfer their research into practice.

An additional alternative intervention in this example would have the researcher responding more specifically to the transitional teacher's feelings and reactions to including the principal. This alternative intervention might be done individually, as an example of a differentiated intervention designed to challenge his developmental level and facilitate his understanding of issues of conflict which generally worry him.

The self-defining teacher in this example (Table VI) suggested a possible solution to the dilemma: i.e., to change the controversial paragraph (based on the principal's response). Although he did not want to be controlled by the principal's ideas, this self-defining teacher did eventually recognize the need for substantive principal involvement if the team's research results were to improve the school. Although unable to resolve his dilemma of principal involvement during the ARCS project, the self-defining teacher, in his final interview, said he wanted to participate on another team in the future in which the principal was also a member.

Issues of Teachers' Definitions of and Competence with Research

Additional issues are being investigated for each team. For example, Table VII shows excerpts on the issue of Teachers' Increasing Competence with Research. Table VIII shows a representative excerpt of the NH team on the Issue of Teacher Definitions of Research. These issues and additional ones are currently being analyzed in terms of teacher's individual comments and the interventions which the researcher undertook as well as suggestions of possible alternative interventions to differentially challenge the teams or individual teachers.

Summary

This paper has compared and contrasted ten teachers who participated in collaborative action research.

This research investigated to what extent a developmental model provided a framework for understanding the observable teacher behavior in the collaborative research process during the natural workings of a collaborative research team.

The ARCS project provided a real world glimpse of teachers' thinking and acting. Neither the tests for developmental stage nor the reflective interviews alone capture teachers in their real world in which they interact with others in a complex array of pressures, expectations, and roles, seldom displaying the order which the developmental stages imply. The current research project observed how the teachers move in the real world of a collaborative research team and tried to understand the range of behaviors exhibited.

Developmental theory posits development of individual self-concept, ego maturity, conceptual complexity, moral judgment,

Table VII

Issue of Teachers' Increasing Competence With Research

Team Member	Comment	Developmental Analysis
Transitional Teacher T-1	Is the literature review our bottom line, then?	Wants to know minimum required.
University Researcher	We need that as a minimum, but there are other ways we can collect data.	
Goal Oriented Teacher GO-1	Like through data on discipline referrals?	Goal oriented teacher is able to generate research alternatives.
University Researcher	Yes...and teacher interviews for their perceptions...	
Self-Defining Teacher	I think we should depend mostly on existing literature/ studies...I'd rather say less, and have my conclusions certain...	This self defining teacher is reluctant to go with anything less than "perfect"; might tarnish his reputation.
Goal Oriented Teacher GO-2	Isn't that part of action research? Generating more questions?	This goal oriented teacher is able to add to her definition of action research.
Goal Oriented Teacher GO-1	If we had another year, we could work on more new questions...	Lack of time - constraint.
University Researcher	But if the HSS scores do not go up, will we have enough support for our hypotheses?	
Goal Oriented Teacher GO-1	They should...unless the changes initiated are not affecting teachers.	Leads group to discuss changes initiated in school since last year.
Transitional Teacher T-1	The survey couldn't be wrong... it's a standardized instrument!	Transitional teacher still believes an instrument (like a leader, or a book, or any authority) couldn't possibly be wrong.

The above examples illustrate the following university researcher interventions:

- Researcher states minimum research requirement, but encourages group to pursue other data sources.
- Researcher asks probing question regarding: Support for team's hypotheses.

Table VIII

Issue of Teacher Definitions of Research

Team Member	Comment	Developmental Analysis
Goal Oriented Teacher GO-2	In doing research, you can get bogged down in things like surveys, and lose sight of overall goals	This goal oriented teacher focuses group on project's broad context; sees overall perspective
Goal Oriented Teacher GO-1	At the NSDC Conference, I learned that action research goes off into many directions, and you need to keep refocusing.	He applies new knowledge gained from attendance at national conference; able to provide larger perspective as result of this experience.
Self-defining Teacher	Ours is an action research project so it keeps changing.. we have to be careful that such constant change doesn't become an end in itself, and an excuse for not focusing in.	
Transitional Teacher T-1	I know why teachers don't do research...it's too hard, too demanding, and too time-consuming. We could never carry through this project without your (university researcher's) help.	This transitional teacher still views university researcher as "teacher", "leader" with greater knowledge than group as whole - also still sees research as "hard work", too hard for teachers.
University Researcher	So you feel teachers need a university researcher or outsider as a team member?	
Transitional Teacher T-1	Yes!...I guess the end point is being able to do research at the local level, but we'll always need others to help us out.	
Self-Defining Teacher	If we'd focused on individual projects, it would have been easier...operating in a group slows the research down.	The self-defining teacher is aware of how group process affects task accomplishment.
University Researcher	It seems we're trying to place some pieces into a larger context...there is an overall framework and a progression we've followed that led us to this point in our research.	

The above examples illustrate the following researcher interventions:

- researcher asks clarifying question.

- researcher summarizes process, placing pieces of team's research into context of total project.

Analysis of this example suggests the following possible alternative intervention:

- discuss with team (and/or with Self-defining teacher) the advantages (long term) that successful group process have over efficient (short term) task accomplishment.

and interpersonal understanding in a series of stages. There is a difference between a person's reflective thought about an issue or experience and the person's functional expression of that experience. When is a teacher consistent or inconsistent in his/her thinking and acting on a particular issue? In a particular situation? To what extent do situational factors in the team or school context cause variability in thinking/acting? A person's functioning at positions lower than the highest he or she is capable of is not necessarily an indication of immaturity, but must be looked at in relation to the demands of the social situation and the interpersonal context.

It is important to gain some sense of how stable a person's developmental understanding is across a range of issues and experiences. Does the person think about each issue at roughly the same developmental position? Are there teachers with fluctuating stage patterns across issues? Do certain issues develop more rapidly than others? What happens for the teacher who is out of pace on a team?

The current research project investigated a critical area in need of study--the longitudinal, week-to-week interaction of teachers in a semi-structured situation: the collaborative research team meeting. Collaborative action research is a new concept in education, and we have no choice but to try to learn how our teachers become "research" wise and to provide opportunities for them to do so. By observing the natural process, we seek to investigate how this concept can be best put into practice.

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